METHOD AND DEVICE FOR THE DETECTION OF MICROORGANISMS BY FIBER OPTICS

ABSTRACT

The objective of the present invention is the detection/ monitoring of microorganisms present in the air, water or foodstuffs through the use of a fiber optic biosensor with an evanescent-field. A first concretization of the present invention concerns a method for detection of contamination by specific microorganisms through the use of the evanescent-field of a sensitive fiber optic characterized by stages of: a) exposing the evanescent-field of the sensitive fiber optic using an appropriate technique based on physical and chemical properties; (b) permitting immediate contact of the exposed evanescent-field obtained in the stage (a) with the sample to be examined, with the aforementioned sample having a form adequate so as to obtain the generation of an optical signal in response to the presence of microorganisms in the sample; and, (c) demodulating the optical signal generated in stage (b) and using this value to quantify the microorganisms through an appropriate method. In a second concretization, the invention is directed to a composition for use in the detection of microorganisms characterized by comprising a selective culture medium for microorganisms needing to be detected and reactants capable of altering the properties of the medium to favor the interaction of the system fiber-microorganism interaction. In a third concretization the invention refers to a device for surveying microorganisms

through the insertion of a sensitive fiber optic (11), with an adequately exposed evanescent-field, into a surface or volume of a biological culture medium (12) specific for the microorganism to be detected, comprising a demodulation system based on a fiber optic circuit and related components.